



BC1015USDIVcorrection\_ST25  
SEQUENCE LISTING

<110> E.I. duPont de Nemours and Company, Inc.  
Meyer, Knut  
Viitanen, Paul  
Van Dyk, Drew E.

<120> High Level Production of P-Hydroxybenzoic Acid in Green Plants

<130> BC1015 US DIV

<140> US 10/718,311

<141> 2003-11-20

<160> 18

<170> PatentIn version 3.4

<210> 1

<211> 32

<212> DNA

<213> artificial sequence

<220>

<223> Primer

<400> 1

ctactcattt catatgtcac accccgcgtt aa

32

<210> 2

<211> 34

<212> DNA

<213> artificial sequence

<220>

<223> Primer

<400> 2

catcttacta gatctttagt acaacggtaga cgcc

34

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<211> 495

<212> DNA

<213> Escherichia coli

<400> 3

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cagcagggaa aaacggtaag cgtgacgatg atccgcgaag ggtttgtcga gcagaatgaa 180

atccccgaag aactgccgct gctgccgaaa gagtctcggt actgggttacg tgaaattttg 240

ttatgtgccg atgggtgaacc gtggcttgcc ggtcgtaccg tcgttcctgt gtcaacgtta 300

agcgggcccgg agctggcggtt acaaaaattg ggtaaaacgc cgtaggacg ctatctgttc 360

acatcatcga cattaacccg ggactttatt gagataggcc gtgatgccgg gctgtggggg 420

cgacgttccc gcctgcgatt aagcggtaaa ccgctgttgc taacagaact gtttttaccg 480

gcgtcaccgt tgtac

495

<210> 4  
 <211> 165  
 <212> PRT  
 <213> Escherichia coli

<400> 4

Met Ser His Pro Ala Leu Thr Gln Leu Arg Ala Leu Arg Tyr Cys Lys  
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Glu Ile Pro Ala Leu Asp Pro Gln Leu Leu Asp Trp Leu Leu Leu Glu  
 20 25 30

Asp Ser Met Thr Lys Arg Phe Glu Gln Gln Gly Lys Thr Val Ser Val  
 35 40 45

Thr Met Ile Arg Glu Gly Phe Val Glu Gln Asn Glu Ile Pro Glu Glu  
 50 55 60

Leu Pro Leu Leu Pro Lys Glu Ser Arg Tyr Trp Leu Arg Glu Ile Leu  
 65 70 75 80

Leu Cys Ala Asp Gly Glu Pro Trp Leu Ala Gly Arg Thr Val Val Pro  
 85 90 95

Val Ser Thr Leu Ser Gly Pro Glu Leu Ala Leu Gln Lys Leu Gly Lys  
 100 105 110

Thr Pro Leu Gly Arg Tyr Leu Phe Thr Ser Ser Thr Leu Thr Arg Asp  
 115 120 125

Phe Ile Glu Ile Gly Arg Asp Ala Gly Leu Trp Gly Arg Arg Ser Arg  
 130 135 140

Leu Arg Leu Ser Gly Lys Pro Leu Leu Leu Thr Glu Leu Phe Leu Pro  
 145 150 155 160

Ala Ser Pro Leu Tyr  
 165

<210> 5  
 <211> 39  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Primer

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<400> 5  
ctactcactt agatctccat ggcttcctct gtcatttct 39

<210> 6  
<211> 32  
<212> DNA  
<213> artificial sequence

<220>  
<223> Primer

<400> 6  
catcttactc atatgccaca cctgcatgca gc 32

<210> 7  
<211> 684  
<212> DNA  
<213> artificial sequence

<220>  
<223> Chimeric gene encoding chloroplast-targeted CPL fusion protein

<400> 7  
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agcatgggtg cacctttcac tggctcctct tcttcagcca cttccctgt tacaagaag 120  
caaaccttg acatcattc cattgctagc aatgggtgaa gagtttagctg catgcaggtg 180  
tggcatatgt cacacccgc gttaacgcaa ctgctgctgc tgcgtattg taaagagatc 240  
cctgcccttg atccgcaact gtcgactgg ctgttgctgg aggattccat gacaaaacgt 300  
tttgaacagc agggaaaaac ggtaagcgtg acgatgatcc gcgaagggtt tgcgagcag 360  
aatgaaatcc ccgaagaact gccgctgctg ccgaaagagt ctcgttactg gttacgtgaa 420  
atattgttat gtgccgatgg tgaaccgtgg cttgccggtc gtaccgtcgt tcctgtgtca 480  
acgttaagcg ggccggagct ggcgttacaa aaattgggta aaacgccgtt aggacgctat 540  
ctgttcacat catcgacatt aaccggggac ttatttgaga taggccgtga tgccgggctg 600  
tgggggcgac gttcccgct gcgattaagc ggtaaaccgc tgttgctaac agaactgttt 660  
ttaccggcgt caccgttgta ctaa 684

<210> 8  
<211> 227  
<212> PRT  
<213> artificial sequence

<220>  
<223> Synthetic chloroplast-targeted CPL fusion protein

<400> 8  
Met Ala Ser Ser Val Ile Ser Ser Ala Ala Val Ala Thr Arg Ser Asn  
1 5 10 15

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Val Thr Gln Ala Ser Met Val Ala Pro Phe Thr Gly Leu Lys Ser Ser  
20 25 30

Ala Thr Phe Pro Val Thr Lys Lys Gln Asn Leu Asp Ile Thr Ser Ile  
35 40 45

Ala Ser Asn Gly Gly Arg Val Ser Cys Met Gln Val Trp His Met Ser  
50 55 60

His Pro Ala Leu Thr Gln Leu Arg Ala Leu Arg Tyr Cys Lys Glu Ile  
65 70 75 80

Pro Ala Leu Asp Pro Gln Leu Leu Asp Trp Leu Leu Leu Glu Asp Ser  
85 90 95

Met Thr Lys Arg Phe Glu Gln Gln Gly Lys Thr Val Ser Val Thr Met  
100 105 110

Ile Arg Glu Gly Phe Val Glu Gln Asn Glu Ile Pro Glu Glu Leu Pro  
115 120 125

Leu Leu Pro Lys Glu Ser Arg Tyr Trp Leu Arg Glu Ile Leu Leu Cys  
130 135 140

Ala Asp Gly Glu Pro Trp Leu Ala Gly Arg Thr Val Val Pro Val Ser  
145 150 155 160

Thr Leu Ser Gly Pro Glu Leu Ala Leu Gln Lys Leu Gly Lys Thr Pro  
165 170 175

Leu Gly Arg Tyr Leu Phe Thr Ser Ser Thr Leu Thr Arg Asp Phe Ile  
180 185 190

Glu Ile Gly Arg Asp Ala Gly Leu Trp Gly Arg Arg Ser Arg Leu Arg  
195 200 205

Leu Ser Gly Lys Pro Leu Leu Leu Thr Glu Leu Phe Leu Pro Ala Ser  
210 215 220

Pro Leu Tyr  
225

<210> 9  
<211> 34  
<212> DNA  
<213> artificial sequence

<220>

<223> Primer

<400> 9

ctactcattt gaagactgca tgcagggtgtg gcat

34

<210> 10

<211> 34

<212> DNA

<213> artificial sequence

<220>

<223> Primer

<400> 10

catcttactg tcgactttag tacaacgggtg acgc

34

<210> 11

<211> 37

<212> DNA

<213> artificial sequence

<220>

<223> Primer

<400> 11

ctactcattt ggccagctct gtcatttctt cagcagc

37

<210> 12

<211> 31

<212> DNA

<213> artificial sequence

<220>

<223> Primer

<400> 12

catcttacta gatctttagt acaacgggtga c

31

<210> 13

<211> 33

<212> DNA

<213> artificial sequence

<220>

<223> Primer

<400> 13

cccgggggta cctaaagaag gagtgcgtcg aag

33

<210> 14

<211> 46

<212> DNA

<213> artificial sequence

<220>

<223> Primer

<400> 14

gatatcaagc tttctagagt cgacatcgat ctagtaacat agatga

46

<210> 15  
 <211> 62  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> Synthetic chloroplast-targeting sequence

<400> 15

Met Ala Ser Ser Val Ile Ser Ser Ala Ala Val Ala Thr Arg Ser Asn  
 1 5 10 15

Val Thr Gln Ala Ser Met Val Ala Pro Phe Thr Gly Leu Lys Ser Ser  
 20 25 30

Ala Thr Phe Pro Val Thr Lys Lys Gln Asn Leu Asp Ile Thr Ser Ile  
 35 40 45

Ala Ser Asn Gly Gly Arg Val Ser Cys Met Gln Val Trp His  
 50 55 60

<210> 16  
 <211> 170  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> Processed chloroplast-targeted CPL synthetic fusion protein

<400> 16

Met Gln Val Trp His Met Ser His Pro Ala Leu Thr Gln Leu Arg Ala  
 1 5 10 15

Leu Arg Tyr Cys Lys Glu Ile Pro Ala Leu Asp Pro Gln Leu Leu Asp  
 20 25 30

Trp Leu Leu Leu Glu Asp Ser Met Thr Lys Arg Phe Glu Gln Gln Gly  
 35 40 45

Lys Thr Val Ser Val Thr Met Ile Arg Glu Gly Phe Val Glu Gln Asn  
 50 55 60

Glu Ile Pro Glu Glu Leu Pro Leu Leu Pro Lys Glu Ser Arg Tyr Trp  
 65 70 75 80

Leu Arg Glu Ile Leu Leu Cys Ala Asp Gly Glu Pro Trp Leu Ala Gly  
 85 90 95

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Arg Thr Val Val Pro Val Ser Thr Leu Ser Gly Pro Glu Leu Ala Leu  
100 105 110

Gln Lys Leu Gly Lys Thr Pro Leu Gly Arg Tyr Leu Phe Thr Ser Ser  
115 120 125

Thr Leu Thr Arg Asp Phe Ile Glu Ile Gly Arg Asp Ala Gly Leu Trp  
130 135 140

Gly Arg Arg Ser Arg Leu Arg Leu Ser Gly Lys Pro Leu Leu Leu Thr  
145 150 155 160

Glu Leu Phe Leu Pro Ala Ser Pro Leu Tyr  
165 170

<210> 17  
<211> 180  
<212> PRT  
<213> Solanum lycopersicum

<400> 17

Met Ala Ser Ser Val Ile Ser Ser Ala Ala Val Ala Thr Arg Ser Asn  
1 5 10 15

Val Thr Gln Ala Ser Met Val Ala Pro Phe Thr Gly Leu Lys Ser Ser  
20 25 30

Ala Thr Phe Pro Val Thr Lys Lys Gln Asn Leu Asp Ile Thr Ser Ile  
35 40 45

Ala Ser Asn Gly Gly Arg Val Ser Cys Met Gln Val Trp Pro Pro Ile  
50 55 60

Asn Met Lys Lys Tyr Glu Thr Leu Ser Tyr Leu Pro Asp Leu Ser Asp  
65 70 75 80

Glu Gln Leu Leu Ser Glu Ile Glu Tyr Leu Leu Lys Asn Gly Trp Val  
85 90 95

Pro Cys Leu Glu Phe Glu Thr Glu His Gly Phe Val Tyr Arg Glu Asn  
100 105 110

Asn Lys Ser Pro Gly Tyr Tyr Asp Gly Ser Thr Gly Pro Cys Gly Ser  
115 120 125

Cys Leu Cys Leu Gly Ala Leu Met Gln Pro Lys Cys Trp Leu Arg Phe  
130 135 140

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Lys Arg Leu Lys Arg His Thr His Lys His Gly Ser Glu Ser Leu Asp  
145 150 155 160

Ser Thr Met Cys Val Lys Cys Ser Val Ser Val Ser Leu Pro Thr Ser  
165 170 175

Gln Lys Ala Thr  
180

<210> 18  
<211> 231  
<212> PRT  
<213> Artificial sequence

<220>  
<223> TP-Ubic synthetic fusion protein

<400> 18

Met Ala Ser Ser Val Ile Ser Ser Ala Ala Val Ala Thr Arg Ser Asn  
1 5 10 15

Val Thr Gln Ala Ser Met Val Ala Pro Phe Thr Gly Leu Lys Ser Ser  
20 25 30

Ala Thr Phe Pro Val Thr Lys Lys Gln Asn Leu Asp Ile Thr Ser Ile  
35 40 45

Ala Ser Asn Gly Gly Arg Val Ser Cys Ala Val Pro Cys Asn Gly Glu  
50 55 60

Phe Gly Met Ser His Pro Ala Leu Thr Gln Leu Arg Ala Leu Arg Tyr  
65 70 75 80

Cys Lys Glu Ile Pro Ala Leu Asp Pro Gln Leu Leu Asp Trp Leu Leu  
85 90 95

Leu Glu Asp Ser Met Thr Lys Arg Phe Glu Gln Gln Gly Lys Thr Val  
100 105 110

Ser Val Thr Met Ile Arg Glu Gly Phe Val Glu Gln Asn Glu Ile Pro  
115 120 125

Glu Glu Leu Pro Leu Leu Pro Lys Glu Ser Arg Tyr Trp Leu Arg Glu  
130 135 140

Ile Leu Leu Cys Ala Asp Gly Glu Pro Trp Leu Ala Gly Arg Thr Val  
145 150 155 160

Val Pro Val Ser Thr Leu Ser Gly Pro Glu Leu Ala Leu Gln Lys Leu  
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165

170

175

Gly Lys Thr Pro Leu Gly Arg Tyr Leu Phe Thr Ser Ser Thr Leu Thr  
180 185 190

Arg Asp Phe Ile Glu Ile Gly Arg Asp Ala Gly Leu Trp Gly Arg Arg  
195 200 205

Ser Arg Leu Arg Leu Ser Gly Lys Pro Leu Leu Leu Thr Glu Leu Phe  
210 215 220

Leu Pro Ala Ser Pro Leu Tyr  
225 230